

one case I have found abundant vigorous seedlings. This was in late June, 1933, on the shores of Burntside Lake near Ely, in one of the coldest parts of the state.

There seems no valid reason to doubt that *Acorus Calamus* is native to North America. There are in the Gray Herbarium a few fruiting specimens from New England,<sup>1</sup> and the facts seem to indicate very definitely that the plant is wholly native in the interior. Here in Minnesota the plant is common throughout the state and bears fruit freely. There is nothing about the local distribution to suggest an introduced plant. Its general distribution is very much like that of *Symplocarpus foetidus* and the genus *Arisaema* of the *Araceae*, as well as many other genera and even species of other families, i. e., it occurs in Asia and eastern North America.<sup>2</sup> This distribution is known in many cases to be a direct result of the Pleistocene disruption of an earlier and much wider circumboreal range. One does not question that *Symplocarpus* has lived in our swamps or *Arisaema* in our woods for ages past. It seems no more than reasonable to assume that these hardy aroids of similar distribution have had the same paleontological history, though the records in the case of *Acorus* have become much blurred by human interference.

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HITCHCOCK'S MANUAL OF THE GRASSES.—For several years botanists of the United States have been looking forward to the appearance of Hitchcock's illustrated volume on the grasses. Now, in May, the first copies have become generally available, although the title-page says

<sup>1</sup> It has been suggested that the sterile European race may have been introduced into certain parts of North America. Without doubt the early settlers along the Atlantic coast were familiar with the domestic uses of the plant. In fact even to-day the rhizomes are used somewhat by their descendants in making candy, and in rural New England one occasionally finds "candied sweet flag" for sale. These settlers possibly brought rhizomes of *Acorus* with them, and it seems possible that some of the material now growing wild in the older settled areas is actually from this source. In this connection see GRAVES, C. B., et al, Catalogue of the flowering plants and ferns of Connecticut. 111. (1910).

<sup>2</sup> Its actual status seems to be intermediate between the two genera cited. *Symplocarpus*, a monotypic genus, occurs in apparently identical form in eastern North America and temperate East Asia. *Arisaema* with two or three species in eastern North America extending into South America has several closely related though obviously distinct species in temperate eastern Asia, as well as a large number of species in the tropics of the Old World. *Acorus Calamus* occurs as var. *vulgaris* in the eastern half of North America, and at least in large part as distinct varieties in eastern and southeastern Asia, while there is a second Asiatic species. Engler, indeed, cites several east Asiatic localities for var. *vulgaris*. Not having seen any Asiatic specimens, I am unable to judge whether these are identical with our North American material. If they are, the natural distribution of this variety would be very like that of the skunk cabbage cited above.

"Issued February 1935." The book<sup>1</sup> is a plump work of more than a thousand pages and abundant illustrations. In typography and paper it is a typical product of the Government Printing Office. Each genus is illustrated, often by the excellent drawings already generally familiar in earlier works, such as *The Genera of Grasses of the United States* (1920), and many species are partially illustrated by inset figures, with maps intended to show their ranges; the genera are supplied with block-keys and a stereotyped description is given for each species. In sequence of tribes the admirable system of the late Professor C. E. Bessey (1911) is essentially followed, although the source of the system is obscured by the statement: "The sequence of tribes and genera . . . is that found in *The Genera of Grasses of the United States*" (Hitchcock, 1920), where Bessey was not mentioned and his phylogenetic sequence was announced as "a new sequence based on the complexity of the flower structure." The sequence is the most natural yet proposed and it is, therefore, desirable that its author be remembered.

In detail the work is, naturally, the record of its author's judgments regarding generic and specific lines; and, in estimating it from the viewpoint of a taxonomist who has studied the grasses, along with many other groups, in the northeastern States, it must be clearly emphasized that he cannot speak for critical students in other sections of the country. With the generic treatments, which in only a few places (as in the *Paniceae*) seriously depart from the well known concepts of Hackel, most botanists will agree. With the specific treatments there will be less agreement; the standards for species in the book are altogether too elastic. The very trivial and inconstant fluctuations of pubescence and the minutest differences in size of spikelets in *Panicum* are still maintained as characterizing sound species (*P. Wernerii* and *linearifolium*; *P. xalapense* and *laxiflorum*; *P. Clutei* and *mattamuskeetense*; *P. barbulatorum* and *dichotomum*; *P. implicatum*, *huachucae*, etc.; *P. tsugetorum* and *columbianum*; *P. Helli*, *Scribnerianum* and *oligosanthes*; etc.). Similarly quite trivial differences in length and abundance of pubescence (largely a vegetative response) and in small fractions of millimeters in size of spikelets are treated as specific in other groups (*Paspalum*, etc.). These matters have been sufficiently studied<sup>2</sup> by competent field-botanists who intimately know their own grasses so that the maintenance of thoroughly discredited "species" as on a par with unquestioned and invariable ones cannot appeal to any but those who set the lowest standard for species.

Singularly enough, Hitchcock often "leans over backward" in his unwillingness to recognize as species or even as varieties or distinguishable forms plants which other discriminating field-botanists of long experience never hesitate to call true species. *Agrostis hyemalis* (Walt.) BSP. (*A. antecedens* Bicknell) is a good illustration. This and *A. scabra* Willd. are treated by Hitchcock as identical, under *A. hyemalis* (the specific name unjustifiably altered by him from Walter's original to *hiemalis*).

<sup>1</sup> A. S. HITCHCOCK, *Manual of the Grasses of the United States* (U. S. Dept. Agric. Misc. Pub. no. 220). 1040 pp., 1696 figs. Washington, ? February, 1935. For sale by Superintendent of Documents, Washington, D. C. Price \$1.75.

<sup>2</sup> See, for instance, Deam, *Grasses of Indiana* (1929); Fernald, *RHODORA*, xxiii. 223-228 (1921, 1922), xxxvi. 20-22 and 61-87 (1934); Fogg, *RHODORA*, xxxii. 233 (1930); House, Bull. N. Y. State Mus. no. 254 (1924); Stone, Pl. So. N. J. (1910); Weatherby, *RHODORA*, xxx. 134 (1928); Weatherby & Griscom, *RHODORA*, xxxvi. 35 (1934); Weatherby, Knowlton & Bean, *RHODORA*, xxxi. 107 (1927); Wiegand & Eames, Fl. Cayuga L. Basin (1926).

Nevertheless, the common and characteristic plant of Walter's territory, flowering in the south at the break of winter or the opening of spring (whence Walter's name *Cornucopiae hyemalis* and Bicknell's *Agrostis antecedens*), is thoroughly distinct from the plant of general Canadian, Alleghenian and transcontinental range, but extending only rarely into the coastal plain southward, which Willdenow described as *A. scabra*.

Personally, I do not know any acute field-botanist, familiar with the two plants, who does not at once distinguish them. Bicknell, as acute an observer as any who has worked on the flora of New York and New England, clearly understood them, though he failed to emphasize some characters which have later come to light; and another of our most accurate field-botanists (but far more conservative than Bicknell), discussing *A. antecedens*, "proposed by a most discriminating botanist," pointed out the different branching, "smaller spikelets more clustered at the ends of the short branchlets" and the "flowering period distinctive" (Bayard Long in *Bartonia*, no. 8: 17 (1924)). The differences between the two species are shown photographically in *RHODORA*, xxxv. t. 246 (1933).

Similarly, other sound species, obviously not clearly understood by the author, are suppressed, with the result, already noted, that the treatments of different genera are very unequal.

In looking over the keys one is at once impressed with the frequent dependence upon variable characters of pubescence and similar points, rather than upon more stable morphological characters. In the key to *Bromus*, for instance, *B. ciliatus* comes under a division (p. 34),

Lemmas pubescent along the margin and on lower part of the back, the upper part glabrous;

while *B. purgans* and *B. latiglumis* are contrasted with it under

Lemmas pubescent rather evenly over the back, usually more densely so along the lower part of the margin.

For the unfortunate collector who happens to get hold of *B. purgans*, forma *glabriflorus* Wieg., with lemmas glabrous, "it is just too bad." There are beautifully definite morphological characters separating these three species of *Bromus* but they are not noted in the key and the descriptions. Incidentally, the embarrassing *B. purgans*, forma *glabriflorus* is not mentioned in the body of the work; the name may possibly be enumerated in the voluminous lists of synonyms at the end of the book. The objection to recognizing forms as such is rather general throughout the book. For instance, still using *Bromus* as illustrative, under *B. latiglumis* (p. 45) we find that "A form with densely canescent sheaths has been called *B. incanus* (Shear) Hitchc." A proper formal combination was available; see *RHODORA*, xxxv. 316 (1933).

The drawings illustrating genera have been noted as copied largely from earlier publications and being most satisfactorily illustrative. It would have been a great help to the user if equal care and direction had been given to the small inserts representing different species. With *Bromus* still before us, look at figs. 18-21 on pages 42 and 43; scarcely a diagnostic point is shown and the confident user is bound to wonder what are the differences. Very similarly with many other groups, the mere illustration of bits of similar inflorescences, without any attempt to display the distinctive characters, gives a specious assurance which will often mislead. How, for instance, will the inexperienced beginner know

whether his specimen should go with fig. 993, 994 or 997 (*Aristida*) or whether his *Paspalum* matches fig. 1227, 1229 or 1231?

The maps displaying ranges have been referred to. These are very small and rigidly confine themselves to the United States, so that in many cases they are not complete maps of the North American range. They give a very general idea of whether the plant is eastern, western, northern or southern but the satisfaction in most cases with a single dot somewhere near the geographic center of each state represented too often leads to a visualization which is far from accurate. *Triplasis purpurea* is characteristic along the Atlantic and the lower Great Lakes; but from Hitchcock's map it would be too easy to infer that it grows in the White Mountains of New Hampshire, in central New York (House says: "especially along the sea beaches of Long Island and Staten Island. Reported from the Great Lakes, Buffalo"), in the Alleghenies of Pennsylvania (Porter cites it for all Pennsylvania only from Presque Isle, on Lake Erie) and from the upland of central Ohio (Schaffner cites it only from shores of Lake Erie). In some cases, notably in *Panicum* and *Spartina*, the coastal distribution of many species is more satisfactorily indicated.

In nomenclature the International Rules are largely followed, but one departure from the SPIRIT (though not the letter) of the International Rules is conspicuous. All personal genitives used as specific names are decapitalized, the International Rules strongly urging, as a recommendation, the slight concession to good taste and scholarship embodied in the capital initial; but here we get *Bromus pumpellianus*, *suksdorfii*, *orcuttianus* and all the rest with undignified initials, so that one cannot help wondering if the author thinks that such decapitalization is recommended in the International Rules. Before and at the Cambridge Congress he emphasized that, if certain points were altered, he would accept and follow the Cambridge decisions. The points he urged were accepted. The wholly unjustifiable *Agropyron pauciflorum* (Schweinitz) Hitchc. (1933 or 1934) is maintained, in spite of the earlier *A. pauciflorum* Schur (1859). The violation of the "homonym rule," a rule for which Hitchcock stood at Cambridge, by the publication of *A. pauciflorum* (Schweinitz) Hitchc. was sufficiently elucidated in RHODORA, xxxvi. 417-419 (1934). But in the main the International Rules are followed. For an extended work emanating from Washington this is a welcome innovation.

Enough has been noted to make it clear that Hitchcock's Manual is bound to be a stimulating and provocative volume. The close students of grasses are too few and the inclination in many quarters is to leave them to the specialist. The drawing together into one volume of treatments of all the genera of grasses in the vast and highly diversified area of the United States is a tremendous advance. The very different interpretations of many of them by the author and by others who intimately know them in special and limited areas will lead to a healthy re-study and re-evaluation of many which are now debatable. The bibliographic material is now before us for further and critical consideration. For thus assembling it our most cordial thanks are extended to Professor Hitchcock.—M. L. F.

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